

The Exploration Game

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Conceptual Exploration

Ingredients

- a domain (G, M, I), where G: entities, M: properties, $I \subseteq G \times M$ incidence
“entity has a statement involving property”
- a domain expert (the player)

Algorithm

- goal: find all valid implications in M:
 $P \rightarrow C$ “all entities with P also have C”
- compute next best candidate implication
- ask domain expert: is this valid?
- yes: \rightsquigarrow add implication
- no: \rightsquigarrow ask for a counter-example
- repeat with the next candidate implication

How does it work?

- Frontend: handles domain selection and tracks implications & counter-examples
- Backend: conexp-clj computes implications
- check for counter-examples using SPARQL

References

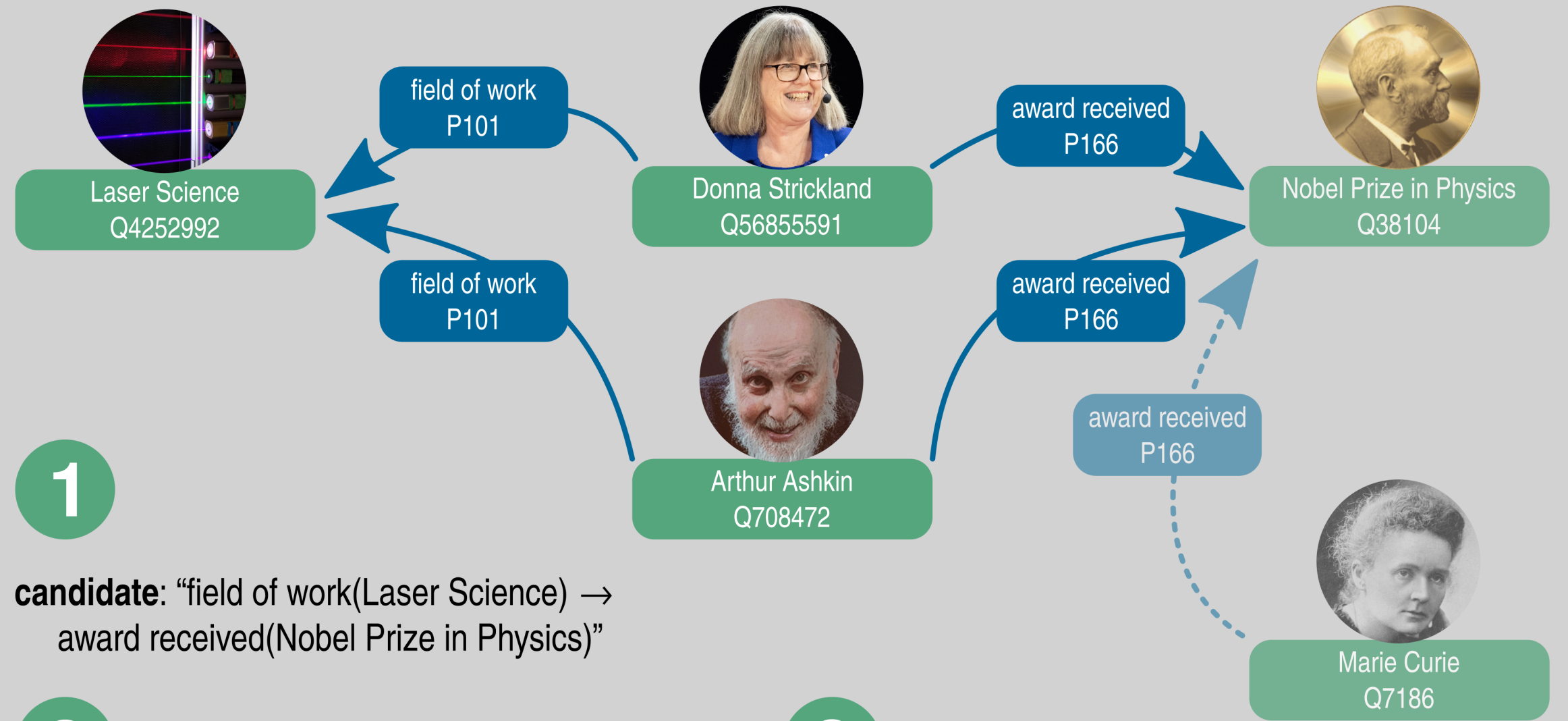
- Tom Hanika, Maximilian Marx, Gerd Stumme. Discovering Implicational Knowledge in Wikidata. ICFA'19
- <https://github.com/mmarx/the-exploration-game/>
- Tom Hanika, Johannes Hirth. Conexp-Clj – A Research Tool for FCA. ICFA'19
- <https://github.com/tomhanika/conexp-clj/>



Overview

The Exploration Game takes you on an interactive journey to discover new knowledge implicitly present in Wikidata. By identifying missing and incomplete information, you can even help with improving Wikidata!

An example



1
candidate: “field of work(Laser Science) → award received(Nobel Prize in Physics)”

2
ask player: is this implication valid?
→ yes!

4
ask player: is this implication valid?
→ no!

3
candidate: “award received(Nobel Prize in Physics) → field of work(Laser Science)”

5
ask player for a counter-example:
→ player adds Marie Curie

6
no further candidate implications
→ game ends

Lasers: Light Amplification by Stimulated Emission of Radiation, User:彭嘉傑, CC-BY-SA 3.0
Donna Strickland: Donna Strickland EM1B5760, Bengt Nyman, CC-BY-2.0
Arthur Ashkin: Arthur Ashkin EM1B5678, Bengt Nyman, CC-BY 2.0

Marie Curie: Marie Curie (Nobel-Chem), Public Domain
Nobel Prize in Physics: Alfred Nobel, User:Zero grey, Public Domain
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Play a round of The Exploration Game
at <https://tools.wmflabs.org/teg/>



DRESDEN
concept

